CLAIM AMENDMENTS

1. (currently amended) A method of producing a strained layer [[(9)]] on a substrate, the method comprising ~~(1, 2) with~~ the steps of:

providing at least one first epitaxial relaxing layer on an SOI-substrate,

producing a defect region [[(7)]] in a layer [[(2, 4, 5, 11)]] neighboring a silicon layer [[(3)]] of the SOI-substrate to which strain is to be ~~imparted~~ transferred, and

relaxing at least one layer [[(4, 11)]] neighboring the silicon layer [[(3)]] to [[which]] strain ~~is to be imparted~~ the silicon layer of the SOI-substrate and to produce the strained silicon layer.

2. (currently amended) The method according to claim 1, further comprising the step of ~~in which~~

forming defects that ~~dislocations are formed which~~ give rise to relaxation of at least one neighboring layer [[(4, 11)]] of the layer [[(3)]] which is to be strained.

3. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1, further comprising the step of

subjecting the layer structure [[,]] for relaxation ~~, is subjected~~ to a thermal treatment and/or oxidation.

4. (currently amended) The [[A]] method according to ~~one of the preceding claims characterized in that at least one~~ claim 1, further comprising the step of depositing the first layer ~~(4; 11) is deposited~~ upon the silicon layer [[(3)]] to be strained.

5. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 4 wherein the first layer [[(4, 11)]] has a different degree of stress than the ~~silicon layer [[(3)]] to be strained.~~

~~6. (currently amended) The method according to one of the preceding claims characterized in that claim 4 wherein the defect region [[(7)]] is produced in the first layer [[(4; 11)]].~~

~~7 - 9. (canceled)~~

~~10. (currently amended) The method according to one of the preceding claims characterized in that claim 1 wherein two neighboring layers [[(11, 13)]] of the layer [[(12)]] to be strained have other degrees of dislocation stress than the layer [[(12)]] to be strained.~~

11. (currently amended) The method according to ~~one of the preceding claims in which~~ claim 1 wherein a plurality of layers [[(11, 13)]] are relaxed.

12. (currently amended) The method according to ~~one of the preceding claims in which~~ claim 1 wherein a plurality of layers [[(3, 12)]] to be strained, have strain ~~imparted~~ transferred to them.

13. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1, further comprising the step of

depositing on the first layer [[(4, 11)]] ~~epitactically~~ epitaxially at least one ~~further~~ second layer [[(5; 12, 13)]] with ~~respectively~~ a different lattice structure ~~is deposited~~.

14. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 13 wherein the defect region [[(7)]] is produced in the second layer [[(5; 13)]].

15. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein on the layer to which strain is to be ~~imparted (3)~~ transferred at least one graded layer is deposited as the first layer [[(4)]].

16. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 15 wherein at the region of the layer [[(3)]] to be strained, the graded layer [[(4)]] has a degree of ~~dislocation which~~ strain that is different from that of the layer [[(3)]] to be strained.

17. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 15, further comprising the step of

producing a defect region ~~(7) is produced~~ in [[a]] the graded layer [[(4)]].

18. (currently amended) The method according to ~~one of the preceding claims in which~~ claim 1, further comprising the step of

depositing an ~~epitactic~~ epitaxial layer structure comprising a plurality of layers ~~is produced~~ on [[a]] the substrate ~~(1, 2, 3, 4, 5, 11, 12, 13) in a deposition process~~.

19. (currently amended) The method according to ~~one of the preceding claims in which~~ claim 1, further comprising the step of

relaxing the first layer ~~(4, 11) is relaxed~~ by a thermal treatment.

20. (currently amended) The method according to ~~one of the preceding claims characterized in that for~~ claim 19 wherein the thermal treatment is done at a temperature between 550 degrees and 1200 degrees C ~~is selected~~.

21. (currently amended) The method according to ~~one of the preceding claims characterized in that for~~ claim 19 wherein the thermal treatment [[,]] is done at a temperature between 700 degrees and 980 degrees C ~~is selected~~.

22. (currently amended) A method according to ~~one of the preceding claims characterized in that~~ claim 19 wherein the thermal treatment is carried out in an inert atmosphere.

23. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 19 wherein the thermal treatment is carried out in a reducing or oxidizing or nitriding atmosphere and especially in nitrogen.

24. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein the relaxation is carried out over a limited region of a layer.

25. (currently amended) The method according to ~~one of the preceding claims in which~~ claim 1, further comprising the step of

applying a mask ~~(6) is applied~~.

26. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein the defect region [[(7)]] is produced by ion implantation.

27. (currently amended) The method according to ~~the preceding~~ claim 26 wherein ~~characterized in that~~ for the implantation, hydrogen ions or helium ions are ~~selected~~ used.

28. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 27 wherein the hydrogen ions or helium ions are implanted with a dose of 3 x 10^{15} to 4 x 10^{16} cm^{-2} ~~, especially with a dose of 0.5 x 1016 to 2.5 x 1016 cm^{-2}~~.

29. (currently amended) The method according to ~~one of the preceding claims characterized in that for~~ claim 26 wherein the implantation [[,]] is done with Si ions ~~are selected~~.

30. (currently amended) The method according to ~~the preceding~~ claim 29 ~~characterized in that~~ wherein the Si ions are implanted with a dose of about 0.5 x 10^{14} to 5 x 10^{14} cm^{-2}.

31. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 26 wherein for the implantation, carbon ions, nitrogen ions, fluorine ions, boron ions, phosphorous ions, arsenic ions, germanium ions, antimony ions, sulfur ions, neon ions, argon ions, krypton ions and/or xenon ions are ~~selected~~ used.

32. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 26 wherein at least two implantations are carried out.

33. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 32 wherein a hydrogen implantation is carried out in combination with a helium implantation.

34. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 32 wherein a boron implantation is carried out in combination with a hydrogen implantation.

35. (currently amended) The method according to ~~one of the preceding claims, characterized in that~~ claim 13, further comprising out the step of

carrying out two implantations ~~are carried out~~ to produce two defect regions in the first layer [[(4)]] and in the second layer [[(5)]].

36. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 26 wherein the [[wafer]] substrate during the ion implantation is tilted at an angle greater than 7 degrees, ~~especially at an angle of 30 to 60 degrees~~.

37. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 32 wherein between two implantations a thermal treatment is carried out.

38. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein the defect region [[(7)]] is produced by a change in the temperature during the formation of one of the layers [[(4, 5; 11)]].

39. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein the defects are produced in a Si-C layer by thermal treatment.

40 - 41. (canceled)

42. (currently amended) The method according to ~~the preceding~~ claim ~~characterized in that the~~ 1 wherein a silicon surface layer [[(3)]] of the SOI substrate [[(1, 2, 3)]] is the layer [[(3)]] to be strained and the SiO_2 of the SOI substrate [[(1, 2, 3)]] forms the insulator ~~(2) on~~ of the substrate [[(1)]].

43. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein an SIMOX or BESOI substrate is selected as [[the]] a base structure for the substrate.

44. (currently amended) The method according to ~~one of the preceding claims characterized by~~ claim 1, further comprising the step of

selecting a silicon on sapphire as [[the]] a base structure for [[a]] the substrate.

45. (currently amended) The method according to ~~one of the preceding claims characterized by selecting a~~ claim 1 wherein the one layer ~~substrate that~~ becomes viscous at a temperature required for the relaxation.

46 - 47. (canceled)

48. (currently amended) The method according to ~~one of the preceding claims characterized by the selection of~~ claim 1 Si-Ge or Si-Ge-C or Si-C as the material for the first layer which is ~~disposed~~ deposited on the layer [[(3)]] to be strained.

49. (canceled)

50. (currently amended) The method according to ~~one of the preceding claims characterized by the choice of~~ claim 13 wherein silicon as the material for the second layer [[(5)]] which is ~~disposed~~ deposited upon the first layer [[(4)]].

51. (currently amended) The method according to ~~one of the preceding claims characterized by the selection of~~ claim 15, further comprising the step of selecting Si-Ge as the material for a graded layer.

52. (currently amended) The method according to ~~the preceding~~ claim ~~characterized in that~~ 51 wherein the germanium concentration in the graded layer decreases from the interface with the layer [[(3)]] to be strained to the surface of the graded layer.

53. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 15 wherein the germanium concentration in a Si-Ge layer at the interface with the layer [[(3)]] to be strained is 100 percent.

54. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein the total layer thickness of the layer structure is so selected that during [[the]] growth of the applied layers [[(4; 11, 13)]] these do not produce any noticeable relaxation.

55. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 54 wherein the dislocation density after the growth amounts to less than 10^5 cm^{-2}.

56. (currently amended) The method according to ~~one of the preceding claims, characterized in that~~ claim 1 wherein a layer [[(3)]] to be strained [[with]] has a thickness d_3 in the range of 1 to 50 nanometers ~~is selected~~.

57. (currently amended) The method according to ~~one of the preceding claims, characterized in that a~~ claim 1 wherein the silicon layer [[(3)]] to be strained [[with]] has a thickness d_3 in the range of 5 to 30 nanometers ~~is selected~~.

58. (currently amended) The method according to ~~one of the preceding claims, characterized in that a~~ claim 57 wherein the first layer ~~(4) with~~ has a thickness d_4 close to [[the]] a critical layer thickness for pseudomorphic growth ~~is selected~~.

59. (currently amended) The method according to ~~one of the preceding claims, characterized by the selection of~~ claim 58 wherein a layer thickness ratio d_4/d_3 [[of]] is greater than about 10.

60. (currently amended) The method according to ~~one of the preceding claims, characterized in that a~~ claim 13 wherein the second layer ~~(5) with~~ has a thickness d_5 = 50 - 1000 nanometer ~~is selected~~.

61. (currently amended) The method according to ~~one of the preceding claims, characterized in that a~~ claim 13 wherein the second layer ~~(5) with~~ has a thickness d_5 = 300 - 500 nanometer ~~is selected~~.

62. (currently amended) The method according to ~~one of the preceding claims in which~~ claim 1 wherein the layer [[(3)]] to be strained is locally strained.

63. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 62 wherein the layer [[(3)]] to be strained is locally strained in [[the]] regions which are vertical in a plane with the defect region.

64. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 13 wherein the defect region [[(7)]] is produced at a spacing of 50 to 500 nanometers from the layer to be relaxed.

65. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein the defect region [[(7)]] is ~~arranged~~ at a spacing of 50 to 100 nanometers above the first layer ~~(4) arranged up~~ on the layer [[(3)]] to be strained.

66. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 13, further comprising the step of

removing the first and second layers [[(4, 5; 11, 12, 13)]] after producing the strained layer [[(9)]] or after producing a strained region ~~, are removed~~.

67. (currently amended) The method according to ~~one of the preceding claims in which etching, especially~~ claim 1 wherein wet chemical material-selective etching [[,]] is used.

68. (currently amended) The method according to ~~one of the preceding claims in which etched~~ claim 67, further comprising the step of

etching trenches ~~(15) are produced~~ in the depth of the layers [[(2, 3, 4, 5, 9, 11, 12, 13)]].

69. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 68, further comprising the step, after producing the etched trenches ~~(15) a relaxation~~ , of

relaxing the first layer [[(4; 11)]] or a further layer ~~,~~ ~~especially~~ by a thermal treatment ~~, is carried out~~.

70. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 68, further comprising the step of

filling the trenches ~~(15) are filled~~ with insulating material to produce shallow trench insulation [[(14)]].

71. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1, further comprising the step of

carrying out at least one further thermal treatment ~~is carried out~~ for relaxation of one or more layers.

72. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1 wherein a strained layer ~~(9) and/~~ or an unstrained layer [[(3)]] are produced with a surface roughness of less than 1 nanometer.

73. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 72 wherein a surface roughness of the layers [[(3, 9)]] is further reduced by the growth of a thermal oxide thereon.

74. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1, further comprising the step of

producing on a strained region of the layer [[(9)]] an [[d]] n- and/or p- MOSFET ~~is produced~~.

75. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1, further comprising the step of

depositing a further ~~epitactic~~ epitaxial layer [[(10)]] comprising silicon or silicon/germanium [[(Si-Ge)]] or an Si-Ge-C layer or a germanium layer ~~are deposited~~.

76. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1, further comprising the step of

producing on a strained silicon-germanium [[(Si-Ge)]] region [[(11)]] p-MOSFETs ~~are produced~~ as further ~~epitactic~~ epitaxial layers or as nonrelaxed layers structures.

77. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 1, further comprising the step of

producing on unstrained region [[(3)]] of the layer 3 to be strained, bipolar transistors ~~are processed~~.

78. (currently amended) The method according to ~~one of the preceding claims characterized in that~~ claim 77 wherein for producing a bipolar transistor, a silicon-germanium layer is applied.

79. (currently amended) The method ~~of producing a layer structure comprising a plurality of strained layers, characterized in that one or more of the method steps in claims~~ according to claim 1, wherein the steps of claim 1 ~~- 78 is~~ are carried out a plurality of times.

80 - 89. (canceled)

90. (withdrawn) An electronic component comprised of a layer structure according to one of the preceding claims 80 - 89.

91. (withdrawn; currently amended) A transistor especially a modulated doped field effect transistor [[(MODFET)]] or a metal oxide semiconductor field effect transistor [[(MOSFET)]] forms the component according to claim 90.

92. (withdrawn) A fully depleted MOSFET as the component according to claim 90.

93. (withdrawn; currently amended) A tunnel diode, especially a silicon germanium [[(Si-Ge)]] tunnel diode as the component according to claim 90.

94. (withdrawn) A silicon-germanium quantum cascade laser as the component according to claim 90.

95. (withdrawn) A photo detector as the component according to claim 90.

96. (withdrawn) A light emitting diode as the component according to claim 90.

97. (new) A method of producing a strained layer on a substrate, the method comprising the steps of:

providing only one first relaxing layer on an SOI-substrate;

producing a defect region in the first layer; and

relaxing the first layer and simultaneously straining a neighboring thin silicon layer of the SOI-substrate to produce the strained silicon layer.

98. (new) A method of producing a strained layer on a substrate, the method comprising the steps of:

providing a first relaxing layer on an SOI-substrate;

epitaxially forming a second layer with a different structure on the first layer;

producing a defect region in the second layer; and

relaxing the first layer and simultaneously straining a thin adjacent layer of the SOI-substrate to produce the strained silicon layer.